

WHAT IS CLAIMED IS:

1. A system for transmitting a signal from a first device to a second device, the system including a transmitting section disposed in the first device and a receiving section disposed in the second device,
- the transmitting section comprising:
 - an encryption key generator for generating an encryption key from said signal;
 - a memory for temporarily storing the encryption key, thereby delaying the encryption key with respect to said signal;
 - an encryption circuit for encrypting said signal by use of the delayed encryption key; and
 - a transmitting circuit for transmitting the encrypted signal to the second device;
 - the receiving section comprising:
 - a receiving circuit for receiving the encrypted signal from the first device;
 - a decryption circuit for decrypting the encrypted signal by use of a delayed decryption key;
 - a decryption key generator for generating a decryption key from the decrypted signal; and
 - a memory for temporarily storing the decryption key, thereby delaying the decryption key with respect to the decrypted signal and obtaining the delayed decryption key.
2. The system of claim 1, wherein the encrypted signal is transmitted intermittently.
3. The system of claim 2, wherein the encrypted signal is transmitted as a series of packets.
4. The system of claim 1, wherein:

the receiving circuit in the receiving section in the second device detects transmission errors in the encrypted signal;

the second device has an initialization control signal generator for generating an initialization control signal when the receiving circuit detects a transmission error in the encrypted signal;

the second device also has a transmitting circuit for transmitting the initialization control signal to the first device; and

the first device has a receiving circuit for receiving the initialization control signal and thereupon sending an initialization command signal to the encryption circuit, the encryption key generator, and the memory in the transmitting section.

5. The system of claim 4, wherein:

the first device has an initialization control signal generator for generating an initialization reply signal when the receiving circuit receives the initialization control signal;

the transmitting circuit transmits the initialization reply signal to the receiving circuit in the second device; and

upon receiving the initialization reply signal, the receiving circuit sends an initialization command signal to the decryption circuit, the decryption key generator, and the memory in the receiving section.

6. The system of claim 1, wherein:

the transmitting section in the first device further comprises:

a first pseudo-random pattern generating circuit for generating a pseudo-random pattern; and

a scrambling circuit for using the pseudo-random pattern to scramble said signal before said signal is encrypted by the encryption circuit;

and the receiving section in the second device further comprises:

a second pseudo-random pattern generating circuit for generating said pseudo-random pattern; and

a descrambling circuit for using the pseudo-random pattern to descramble the decrypted signal.

7. The system of claim 1, wherein the first device also has a receiving section similar to the receiving section in the second device, and the second device also has a transmitting section similar to the transmitting section in the first device, for transmitting another signal from the second device to the first device.

8. A method of transmitting a signal from a first device to a second device, comprising the steps of:
generating an encryption key from said signal;
delaying the encryption key with respect to said signal, thus obtaining a delayed encryption key;
encrypting said signal by use of the delayed encryption key, thus obtaining an encrypted signal;
transmitting the encrypted signal from the first device to the second device;
decrypting the encrypted signal by use of a delayed decryption key, thus obtaining a decrypted signal;
generating a decryption key from the decrypted signal;
and
delaying the decryption key with respect to the decrypted signal, thus obtaining the delayed decryption key.

9. The method of claim 8, wherein the encrypted signal is

transmitted intermittently.

10. The method of claim 9, wherein the encrypted signal is transmitted in packets.

11. The method of claim 8, further comprising the steps of:
detecting a transmission error in the encrypted signal at the second device;

transmitting an initialization control signal from the second device to the first device when the transmission error is detected; and

initializing the encryption key when the first device receives the initialization control signal.

12. The method of claim 11, further comprising the steps of:

transmitting an initialization reply signal from the first device to the second device when the first device receives the initialization control signal; and

initializing the decryption key when the second device receives the initialization reply signal.

13. The method of claim 8, further comprising the steps of;
generating a pseudo-random pattern in the first device and the second device;

scrambling said signal according to the pseudo-random pattern in the first device, before said signal is encrypted; and

descrambling the decrypted signal according to the pseudo-random pattern in the second device.